

DISCUSSION

In view of the following discussion, reconsideration and further examination are respectfully requested.

In the present Response, none of the claims have been amended or cancelled, and no new claims have been added. Consequently, claims 1-12 are still currently pending and under consideration.

The Applicant first wishes to thank the Examiner for acknowledging the claim to foreign priority. It should be noted that the certified copies of the foreign priority applications will be supplied in due course.

On page 2 of the Office Action, claims 1-12 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. More specifically, it was asserted on page 2 that "[i]t is unclear within the claim language of independent claims 1, 6, 7 and 12 as to what applicant means by a pumping light reflection portion and its structural relation with the pumping light recited in the preamble." In traversal, the Applicant submits that this language is not indefinite and the scope of the claims are clear.

One purpose of the definiteness requirement is to ensure that the metes and bounds of the claims are clear so that the public is aware of what constitutes infringement. The Examiner has the initial burden to prove that claims are indefinite. When making this determination, the "[d]efiniteness of claim language must be analyzed, not in a vacuum, but in light of: (A) The content of the particular application disclosure; (B) The teachings of the prior art; and (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made." MPEP 8th Ed. §2173.02. Moreover, it should be heeded that the "examiner's focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. 112, second paragraph is whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available." MPEP 8th Ed. §2173.01. It is submitted that, after reviewing the application, one of ordinary skill in the art would understand

the meaning of the "pumping light portion" and its relationship to the other claimed features. For example, the specification at page 13, line 26 - page 14, line 6 describes that "[t]he pumping light introduced by the pumping light introducing fiber 3 propagates forward inside the fiber casing 4 while crossing the laser fiber 2 and index matching oil 6 contained therein, and reaches the inner wall of the fiber casing 4 and is reflected by the metal plated layer 4c or the transparent cladding layer 4d. The reflected pumping light propagates inside the fiber casing 4 in the same manner to be repeatedly reflected by the metal plated layer 4c or the transparent cladding layer 4d." Reviewing the application, one of ordinary skill in the art would appreciate that the pumping light reflecting portion includes a portion that reflects the pumping light thereby improving the introduction efficiency of the pumping light. Thus, it is submitted that claims 1-12 are definite, and therefore, it is requested that the rejection of claims 1-12 based on 35 U.S.C. §112, second paragraph, be withdrawn.

On page 3 of the Office Action, claims 1-8 and 10-12 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,050,173 to Hughes (hereinafter "Hughes"). It is well settled law that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference in as complete detail as is contained in the claim. In traversal, the Applicants submit that Hughes does not disclose the invention set forth in the claims.

With respect to independent claim 1, Hughes for example fails to disclose or suggest "a fluid medium having a refractive index substantially identical to said cladding portion at a wavelength of said pumping light." As described with reference to the FIG. 1 embodiment in the present application, index matching oil (6) flows through casing (4) so as to cool the optical fiber (2). By adjusting the refractive index of the cladding (2d) of the optical fiber (2) and the oil (6), the scattering loss of the pumping light can be reduced so as to efficiently convert the pumping light into the laser beam.

It should be easily recognized that Hughes fails to disclose the recited fluid medium. In FIG. 2 of Hughes, individual strands of optical fiber 1 are folded over

once to form a single loop. Referring to FIGS. 9-10 of Hughes, optical fiber 28 is wound around a drum 29, and the packed fiber layers 31 are cut to form individual strands of optical fiber 1 that are looped only once. At end faces 4 of optical fibers 1, an index matching material 5 couples the fiber end faces 4 to a mirror 6. However, Hughes fails to disclose utilizing a fluid medium, let alone a fluid medium having a refractive index substantially identical to cladding 3 of optical fiber 1. As a result, Hughes does not anticipate independent claim 1.

Moreover, the remaining references fails to remedy this missing feature. For instance, U.S. Patent No. 3,639,672 to Kafka (hereinafter "Kafka") fails to disclose the fluid medium as recited in claim 1. In FIG. 1, Kafka depicts a cryogenic electric conductor formed from a plurality of superconducting wires 2. Superconducting wires 2 are enclosed in a vacuum tight sheath 5, which is filled with a low-temperature cooling medium, such as liquid helium. The optical properties of the cooling medium, such as its refractive index, and the relationship of the cooling medium's optical properties to that of the other components are not discussed in Kafka. Thus, claim 1 cannot be rendered obvious by the combination of the above-discussed references. For this and other reasons, it is submitted that claim 1 and its dependent claims are allowable over the references of record.

Regarding independent claim 6, the cited references fail to disclose or suggest all of the recited features. For instance, as discussed in detail above, both Hughes and Kafka fail to disclose "a fluid medium having a refractive index substantially identical to said cladding portion at a wavelength of said pumping light." For this and other reasons, it is submitted that independent claim 6 is in condition for allowance.

Concerning independent claim 7, Hughes fails to anticipate claim 7 for a number of reasons. Among these reasons, Hughes fails to disclose or suggest "an optical fiber bundle in which said optical fiber forming at least one optical path is bundled" and "a pumping light introducing portion for introducing pumping light for pumping said laser medium in said optical fiber, said pumping light introducing portion being bundled together with said optical fiber in said optical

fiber bundle” as recited in claim 7. Specifically, Hughes does not have a pumping light introducing portion that is bundled with an optical fiber bundle. As noted above, in Hughes, optical fiber 2 is folded only once and does not have a single optical fiber that is continuously and repeatedly folded to form an optical fiber bundle. Referring to FIG. 2 of Hughes, a laser diode array 12 is positioned around the outside of fiber bundle 11 in order to radiate optical radiation 10 onto bundle 11. As should be appreciated, laser diode array 12 in Hughes is not bundled with fiber bundle 11, and as a result, Hughes fails to anticipate claim 7. The remaining cited references fail to remedy this missing feature. For this and other reasons, it is submitted that claim 7 and its dependent claims are allowable over the references of record.


With respect to independent claim 12, Hughes fails to disclose or suggest “a pumping light introducing portion for introducing pumping light for pumping said laser medium in said optical fiber bundle, said pumping light introducing portion being bundled together with said optical fiber in said optical fiber bundle.” As discussed above, laser diode array 12 in Hughes is not bundled with fiber bundle 11, and the remaining references fail to remedy this missing feature. For this and other reasons, it is submitted that claim 12 is allowable over the references of record.

CONCLUSION

In view of the above discussion, it is respectfully submitted that the present application is in condition for allowance and an early Notice of Allowance is respectfully requested. If, after reviewing this discussion, the Examiner feels

that any issues remain which must be resolved before the application can be passed to issue, the Examiner is invited to contact the Applicant's undersigned representative by telephone to resolve such issues.

Respectfully submitted,

By 

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